

CLAIMS

1. A device for determining vibration characteristics of vibrated, supported, generally round, substantially ellipsoid articles, such as eggs, comprising:
- an elastic hammer with handle and head, for tapping and thereby acoustically vibrating such article,
 - 5 - a handle driving element for reciprocating the hammer generally in a plane around an axis in the handle,
 - a microphone arranged immediately adjacent to and directed to the article, for picking up acoustic vibrations generated by the article, and
 - a signal processing means for processing the signals picked up by the
 - 10 microphone for determining vibration characteristics of the article,
- characterized in that
- the handle adjacent the axis consists of an arm portion to be driven which is connected, through a hinge element, with a handle end having at the extremity thereof a mount having therein a ball as a head, while at least the
- 15 hinge element and the handle end form a hammer rod in one piece.
2. A device according to claim 1, characterized in that
- the plane passes through the long axis of the article.
- 20 3. A device according to claim 1 or 2, characterized in that
- at least a single microphone is arranged in said plane, or through the long axis in a second plane substantially perpendicular to said plane.
4. A device according to any one of the preceding claims, characterized in
- 25 that the hammer rod and the arm portion form a whole, with the hammer rod forming a leaf spring portion having a spring constant k in the range between 1.2 and 1.6 N/m.

5. A device according to any one of the preceding claims, **characterized in that** the handle driving element further comprises a holder with pin hole for a pin perpendicular to the first plane and through the arm portion, with an
- 5 electromagnet attached to the holder for reciprocating the hammer generally in said plane, with a magnet included in the arm portion adjacent the electromagnet, and with a stop element for the arm portion during the forward movement.
- 10 6. A device according to claim 5, **characterized in that** the handle driving element further comprises a stop for interrupting the backward movement of the hammer.
- 15 7. A device according to claim 5 or 6, **characterized in that** the ball is made of steel, and that the handle driving elements further comprises a holding element with which the hammer is held after a backward movement, the holding element consisting of a stop block for the leaf spring portion and a holding magnet for the ball.
- 20 8. A device according to claim 1, **characterized in that** the hammer rod is further coupled by means of a bistable switch with the arm portion, the switch having a first and a second snap position, and the hammer rod being movable either to the first snap position or to the second snap position.
- 25 9. A device according to claim 8, **characterized in that** the hammer rod in the forward movement is switched to the first snap position, and in the backward movement to the second snap position.

10. A method for determining vibration characteristics of vibrated articles such as eggs, characterized in that tapping of the articles is carried out with a device according to any one of the preceding claims.

5 **11. A method according to claim 10, characterized in that tapping consists of a single momentary tapping pulse.**

12. A method according to claim 10 or 11, characterized in that the method is applied in a sorting device for eggs.

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13. A method according to claim 10, 11 or 12, characterized in that the eggs are tapped at least twice.